

Multiparameter approach to tracking improved water quality and habitat conditions in Onondaga Lake New York

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Biographical Sketches of Authors

Dr. Elizabeth Moran is President of EcoLogic LLC, a small environmental consulting firm specializing in water resources issues. She has been a technical advisor in limnology to Onondaga County for about 15 years, as the County implements an extensive series of improvements to its wastewater collection and treatment infrastructure. Jeanne Powers manages Onondaga County's Ambient Monitoring Program and is responsible for oversight and reporting on this complex program. She is trained in environmental engineering and integrates the decisions related to the level of treatment of wastewater and location of discharge with the water quality monitoring and modeling efforts.

Abstract

There is a need to develop effective strategies to communicate progress on complex issues of science and public policy. Onondaga County Department of Water Environment Protection (OCDWEP) monitors and reports on several key metrics of water quality and biology to assess progress towards improvement in Onondaga Lake. OCDWEP is responsible for designing and implementing a comprehensive monitoring program of Onondaga Lake and its watershed. The Ambient Monitoring Program (AMP) is designed to provide data and information regarding the effectiveness of a series of improvements to the County's wastewater collection and treatment system. Effectiveness is measured in terms of progress on two fronts: (1) compliance with water quality standards and guidance values and (2) restoration of a balanced ecological community of plants and animals. Onondaga Lake has been the subject of intense monitoring and research since the 1970s. The AMP builds on the historical data but includes an expanded program of biological monitoring; phytoplankton, zooplankton, fish, macrophytes, benthic macroinvertebrates and zebra mussels are now included in an integrated program to assess water quality conditions and biological response. We have developed a series of metrics to analyze and report findings of this integrated program. The metrics describe conditions related to specific desired uses:

- Water contact recreation (indicator bacteria and water clarity in nearshore areas)
- Aesthetics (total phosphorus, frequency, intensity, and duration of algal blooms, percent cyanobacteria)
- Aquatic life protection (ammonia and nitrite N, dissolved oxygen)
- Fish reproduction (success of target warmwater species)